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and *P. oedipus* being infested by a Nematode which he called *Rhabditis terricola* Duj. The form according to Coemans, is common in decaying substances and not of rare occurrence in the above named species. He cites references to previous observations upon the subject by Persoon,[†] Currey,[‡] and Ehrenberg§. Illustrations of the worm and its work supplement the text|| and lead to the conclusion that the species under observation is identical with that studied by the older authors.

Material from this culture was sent to Dr. C. W. Stiles of the Public Health and Marine-Hospital Service for identification. He reported that only larvae could be found and as no adults developed after a considerable period of observation he concluded that the species was parasitic upon the horse.

The papers cited above contain a discussion as to the relation of the worm to the fungus but only conflicting conclusions are reached; nor have we any theory to advance to explain the occurrence of the worms within the sporangiophores of the mould.

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†. Obs. Myc. 1:77. 1796.

‡. Jour. Linn. Soc. London 1:166.

§. Kuntze and Schmidt, Myk. Hefte. 2:67. 1823.

||. Pl. 11. A 19, C, D.

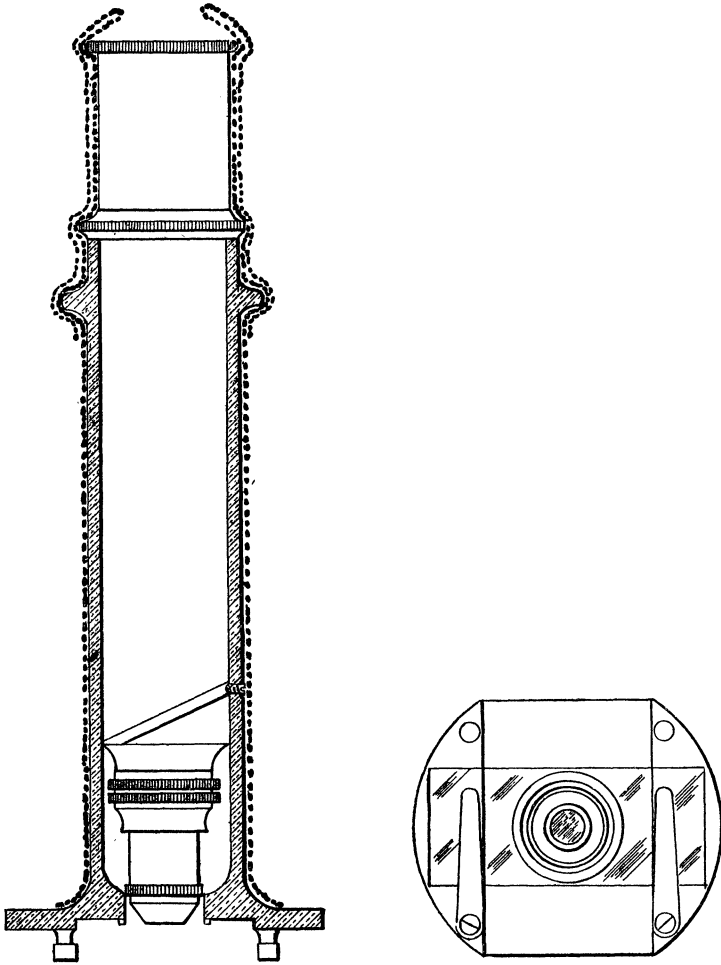
Microscopy Notes.

II. A CONVENIENT FIELD MICROSCOPE.

BY JOSEPH A. MARTIN.

The ordinary type of instrument advertised by optical companies, as a compound field microscope, such as designed to collect microscopic plants has many objections to its adoption for general use, especially because they are expensive and inconveniently constructed.

In gathering material or objects, such as algae, it is very essential for one to know whether or not the material is in favorable condition before leaving the field; for if left to be examined in the laboratory later and then found to be worthless loss of time results. On returning the following day it is not likely that one will find the



plants in the same stages of development, even after so short a time. An instrument then, that would have simple and effective workings would save much time and unnecessary trouble in gathering and examining or observing very minute objects. Then again, the best specimens of algae are oftentimes found where the ordinary field microscope, with its fittings so complicated, as though it were a laboratory instrument, is difficult to be used. It is really necessary that the different stages of plants be recognized before the collector leaves the field.

The accompanying illustration represents the contrivance one-half size, now used by the collectors of the University in gathering

and examining material in the field. This device is simply a modified demonstration microscope used in class examination of objects. The handle usually seen attached to the apparatus in the optical catalogues, is left off and the base is cut down to a narrow circular outline, so as to fit easily into the collector's pocket. A piece of Gooch tubing is stretched over the brass fittings of the instrument, to protect it from the corrosive action of the water and dirt. The ocular may be protected by a rubber cap and the objective is always kept from injury by the thick slide securely held by two clamps. The lenses most convenient are found to be either a two-thirds objective, with a wide aperture, and one inch or one-half inch ocular, or a one-half inch objective with a one inch ocular. Any higher power of objective combination than those indicated, was found difficult to focus, as there is no micrometer adjustment, and if one were present would be very inconvenient to work. A one-fourth inch objective was used but was discarded owing to the fact that it could not be rapidly brought to focus.

In making an examination, a small amount of the material is put on the outside of the slide, then held up to the light and by turning the tube may be focused. If a drop of water is examined for unicellular plants, the microscope may be held downwards to the reflection of the light of the sky from the water. A cover-glass is very desirable, though it is never really necessary except with unicellular forms.

Experience has shown that it is hardly ever necessary to use a combination higher than a two-thirds-inch objective, and a one-inch ocular. Such difficult material as conjugating desmids 13 to 15 microns in diameter were clearly and conclusively demonstrated with the combination just mentioned and this is about the smallest specimen likely to be gathered in ordinarily field work. The wider the aperture of the objective the better results will be attained, owing to the fact that the wide aperture takes in a broader field. The usefulness of the instrument as a demonstration microscope is not impaired in the least, and the handle can be replaced in a few moments. The type for field use is always kept nearly in focus by the Gooch tubing which is doubled on itself near the eye-piece to obviate wear on the milled parts of the microscope. Its simple construction makes it easy for students to use it with little danger or injury and all working parts are so thoroughly concealed that it is practically impossible for dust and dirt to penetrate.

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